
टार और बिटुमिनस सामग्री के परीक्षण
के तरीके

भाग 2 इलास्टिक रिकवरी का निर्धारण

(दूसरा पुनरीक्षण)

Methods for Testing Tar and
Bituminous Materials

Part 2 Determination of Elastic Recovery

(Second Revision)

ICS 75.140

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FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Bitumen, Tar and Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Product Division Council.

This standard was originally published in 1958 as 'Methods for testing tar and bituminous materials — Determination of ductility. The first revision was carried out in 1978. 'Methods for testing tar and bituminous materials' was published as series of 22 standards in the form of a booklet, as listed below:

<i>IS No.</i>	<i>Title</i>
IS 1201 : 1978	Sampling
IS 1202 : 1978	Determination of specific gravity
IS 1203 : 1978	Determination of penetration
IS 1204 : 1978	Determination of residue of specified penetration
IS 1205 : 1978	Determination of softening point
IS 1206	Determination of viscosity:
(Part 1) : 1978	Industrial viscosity
(Part 2) : 1978	Absolute viscosity
(Part 3) : 1978	Kinematic viscosity
IS 1207 : 1978	Determination of equiviscous temperature (EVT)
IS 1208 : 1978	Determination of ductility
IS 1209 : 1978	Determination of flash point and fire point
IS 1210 : 1978	Float test
IS 1211 : 1978	Determination of water content dean and stark method
IS 1212 : 1978	Determination of loss on heating
IS 1213 : 1978	Distillation test
IS 1214 : 1978	Determination of matter insoluble in benzene (Withdrawn due to toxic nature of benzene)
IS 1215 : 1978	Determination of matter insoluble in toluene
IS 1216 : 1978	Determination of solubility in carbon disulphide trichloroethylene
IS 1217 : 1978	Determination of mineral matter ash
IS 1218 : 1978	Determination of phenols
IS 1219 : 1978	Determination of naphthalene
IS 1220 : 1978	Determination of volatile matter content

However, the committee responsible for the formulation of standards in the field of bitumen, tar and related products decided to publish these Indian standards separately for each test so as to make it user friendly.

The second revision has been taken up to keep pace with the latest technological development and international practices. In this revision following major changes have been made:

- a) Method for determination of elastic recovery has been incorporated in the standard;
- b) This standard has been divided into two parts as listed below:
 - 1) Method for testing tar and bituminous materials: Part 1 Determination of ductility.
 - 2) Method for testing tar and bituminous materials: Part 2 Determination of elastic recovery.
- c) Method for determination of elastic recovery is based on IRC method and prepared as specified in IS 15462.

The composition of the committee, responsible for formulation of this standard is listed in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***METHODS FOR TESTING TAR AND BITUMINOUS MATERIALS****PART 2 DETERMINATION OF ELASTIC RECOVERY***(Second Revision)***1 SCOPE**

This standard covers the method of determination of the elastic recovery of modified bitumen. This is a simple test intended to optimize dose of polymeric additive in bitumen and also help in assessing quality of PMB in laboratory.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this draft standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

<i>IS No.</i>	<i>Title</i>
IS 334 : 2002	Glossary of terms relating to bitumen and tar (<i>third revision</i>)

IS 1208 (Part 1) : Determination of ductility 2023

3 TERMINOLOGY

For the purpose of this standard the following definition and those given in IS 334 shall apply.

4 PRINCIPLE

The elastic recovery of modified bitumen is evaluated by comparing recovery of thread after conditioning for 1 h at specified temperature and the specimen is elongated up to 10 cm deformation in a ductility machine. This is intended to assess degree of bitumen modification by Elastomeric additives. The cross-section of the specimen mould shall be as shown in Fig.1.

5 APPARATUS

5.1 Ductility Machine and Moulds — As per IS 1208 Part1 and Fig. 1.

5.2 Thermometer — Any standard thermometer of equivalent range and accuracy shall be used.

5.3 Scissors — Any type of conventional scissors capable of cutting modified bitumen at the test temperature.

5.4 Scale — Any transparent scale of measuring up to 25 cm with ± 1 mm accuracy.

6 PROCEDURE

6.1 Prepare the test specimens in a set of three moulds as per dimensions given in Fig. 1 and condition as prescribed in test method of IS 1208. Elongate the test specimen at the specified rate to a deformation of 10 cm at a rate of (5 ± 0.25) cm/min. Immediately cut the test specimen into two halves at the midpoint using the scissors. Keep the test specimen in the water bath in an undisturbed condition for 1 h before testing.

6.2 After the 1 h time period, move the elongated half of the test specimen back into position near the fixed half of the test specimen so the two pieces of modified bitumen just touch. Record the length of the recombined specimen as X.

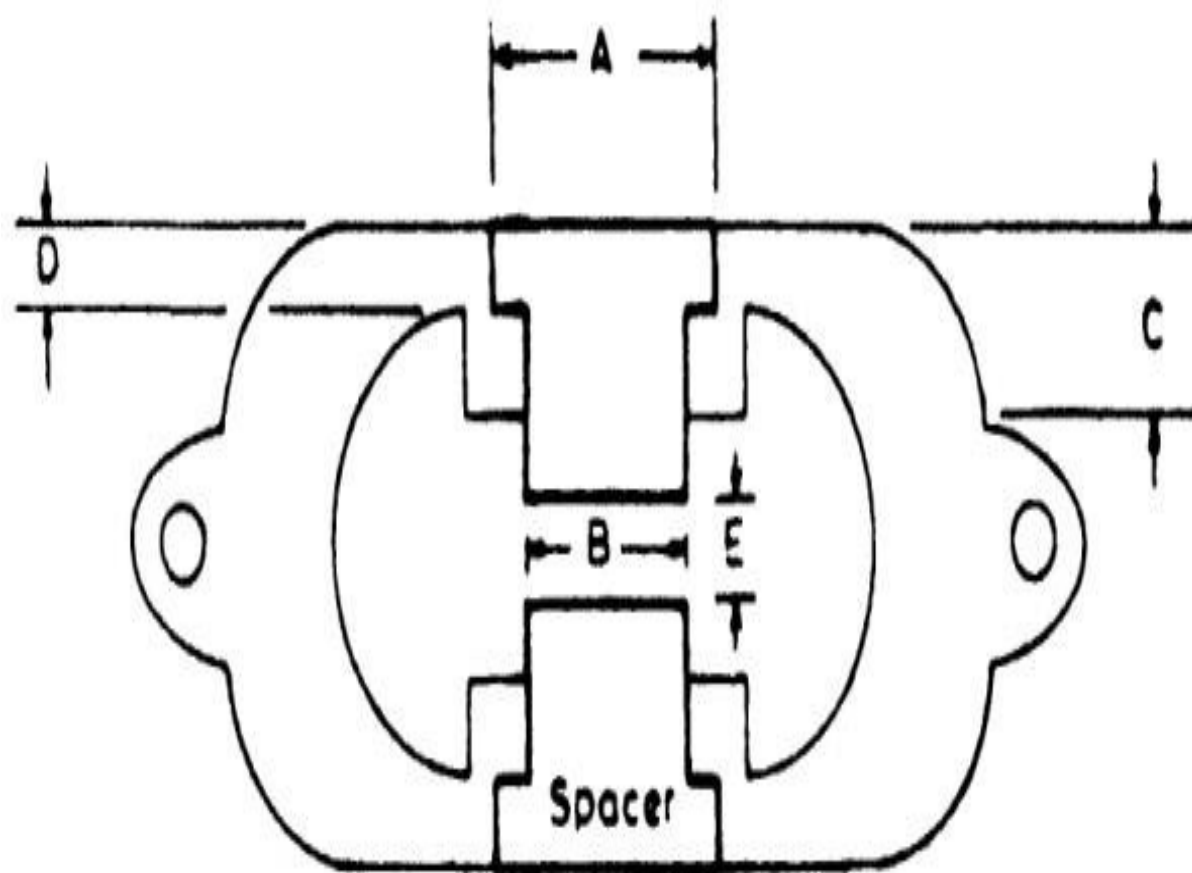
7 REPORT

Calculate the percent/elastic recovery by the following procedure:

$$\text{Elastic recovery (\%)} = \frac{10-X}{10} \times 100$$

where

X = length of recombined specimen.



$A - 36.5 \pm 0.1 \text{ mm}$
 $B - 30.0 \pm 0.1 \text{ mm}$
 $C - 17.0 \pm 0.1 \text{ mm}$
 $D - 10.0 \pm 0.1 \text{ mm}$
 $E - 10.0 \pm 0.1 \text{ mm}$

FIG. 1 DESIGN OF MOULD FOR ELASTIC RECOVERY

ANNEX A
(Foreword)

COMMITTEE COMPOSITION

Bitumen, Tar and Related Products sectional committee, PCD 06

<i>Organization</i>	<i>Representative(s)</i>
CSIR - Central Road Research Institute, New Delhi	DR AMBIKA BEHL (Chairperson)
Airports Authority of India, New Delhi	SHRI VINOD KUMAR SHARMA SHRI SUPRIO GOSH (<i>Alternate</i>)
Bharat Petroleum Corporation Limited, Mumbai	SHRI C. SHANMUGANATHAN MS SONAL MAHESHWARI (<i>Alternate</i>)
Birla Institute of Technology and Science, Pilani	SHRI SRIDHAR RAJU
CSIR - Central Road Research Institute, New Delhi	DR SIKSHA SWAROOP KAR
CSIR - North East Institute of Science and Technology, Jorhat	DR SHASHI D. BARUAH DR B. P. BARUAH (<i>Alternate</i>)
Central Public Works Department, New Delhi	SHRI DIVAKAR AGRAWAL
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Dilip Buildcon Limited, Bhopal	SHRI B. B. KAMESWARA RAO SHRI ANUSH K. C. (<i>Alternate</i>)
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Hindustan Colas Private Limited, Mumbai	SHRI T. K. SUBHAASH SHRI K. G. RANGANATHA (<i>Alternate</i>)
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Hindustan Petroleum Corporation Limited, Mumbai	SHRI SANTOSH DHAKU BHOGALE
IRB Infrastructure Developers Limited, Mumbai	SHRI SUDHIR HOSHING SHRI JITENDER CHAUHAN (<i>Alternate</i>) MS SONALI SARKAR (<i>Alternate</i>)
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Indian Institute of Technology Madras, Chennai	DR J. MURALI KRISHNAN DR A. VEERARAGHAVAN (<i>Alternate</i>)

IS 1208 (Part 2) : 2023

<i>Organization</i>	<i>Representative(s)</i>
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Indian Oil Corporation Limited - Refineries and Pipelines Division, New Delhi	SHRI S. SARKA SHRI K. MEDHI (<i>Alternate</i>) DR MONIKA (<i>Alternate</i>)
Indian Oil Corporation Limited, New Delhi	DR N. S. RAMAN
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Indian Oil Total Private Limited, Mumbai	SHRI PANKAJ KUMAR JAIN SHRI GAURAV GOGNE
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Member Secretary
SHRI. HARI MOHAN MEENA
SCIENTIST 'C'/DEPUTY DIRECTOR,
(PETROLEUM, COAL AND RELATED PRODUCTS), BIS

Bureau of Indian Standards

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Amendments Issued Since Publication

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